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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

LESPERANCE, J

ART UNIT

PAPER NUMBER

2774

DATE MAILED:

11/05/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/07/202

Applicant(s)

Hoi-Sing Kwok et al

Examiner

Jean Lesperance

Group Art Unit

2774

—The MAILING DATE of this communication appears on the cover sheet beneath the correspondence address—

Period for Response

A SHORTENED STATUTORY PERIOD FOR RESPONSE IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a response be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for response specified above is less than thirty (30) days, a response within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for response is specified above, such period shall, by default, expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to respond within the set or extended period for response will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Status

- ☐ Responsive to communication(s) filed on _____
- ☐ This action is FINAL.
- ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- ☐ Claim(s) 1-16 is/are pending in the application.
- Of the above claim(s) _____ is/are withdrawn from consideration.
- ☐ Claim(s) _____ is/are allowed.
- ☐ Claim(s) 1-16 is/are rejected.
- ☐ Claim(s) _____ is/are objected to.
- ☐ Claim(s) _____ are subject to restriction or election requirement.

Application Papers

- ☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.
- ☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.
- ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- ☐ The specification is objected to by the Examiner.
- ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119 (a)-(d)

- ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
 - ☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been received.
 - ☐ received in Application No. (Series Code/Serial Number) _____
 - ☐ received in this national stage application from the International Bureau (PCT Rule 1.7.2(a)).

*Certified copies not received: _____

Attachment(s)

- ☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____
- ☒ Notice of References Cited, PTO-892.
- ☐ Notice of Draftsperson's Patent Drawing Review, PTO-948
- ☐ Interview Summary, PTO-413
- ☐ Notice of Informal Patent Application, PTO-152
- ☐ Other _____

Office Action Summary

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DETAILED ACTION

Drawings

1. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.
2. Claims 1 to 16 are presented for examination.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-6 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated over Patent # 5,933,203("Wu et al.").

Wu et al. discloses a method of driving a bistable cholesteric liquid crystal display (column 1, lines 21-27) comprising the steps of: providing reset voltage to set the pixels in the display to the reflective P state (column 7, lines 52-55); switching selected pixels to provide the desired pattern to the FC state (column 8, lines 14-18) and; holding said display for a suitable viewing period (column 6, lines 13-15).

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As to claim 2, a method of driving a bistable cholesteric liquid crystal display as claimed in claim 1 wherein said method comprises providing electrical pulses to column and row electrodes to impart a voltage on the cholesteric liquid crystal material in each pixel to drive the switching between the P state and FC state (column 10, lines 45-54).

As to claim 3, a method of driving a bistable cholesteric liquid crystal display as claimed in claim 2 wherein said reset voltage is in the range of 10 to 40 V (Fig.2 states that it is approximately 32 volts).

As to claim 4, a method of driving a bistable cholesteric liquid crystal display as claimed in claim 2 wherein said step of providing electrical pulses to electrodes (column 10, lines 50-59) to switch said selected pixels to FC state to provide said display comprises driving one set of electrodes with the address pulse (column 10, lines 1-25) and the remaining set of electrodes with data pulses such that the selected pixels are subjected to a voltage being the sum of the address and data pulses which is greater than the threshold voltage to switch to the FC state (column 11, lines 11-26) the non-selected pixels received a voltage with a data pulse of inverse sign to be a voltage below the threshold for switching to the FC state (column 11, lines 2-10).

As to claim 5, a method of driving a bistable cholesteric liquid crystal display (column 1, lines 21-27) as claimed in claim 2 wherein said viewing phase comprises applying insufficient voltages to any pixels to cause a change from the P state to the FC state (column 14, lines 24-35).

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As to claim 6, a bistable cholesteric liquid crystal display comprising: a bistable cholesteric liquid crystal display; a plurality of pixels within the display (column 6, lines 4-7); driving means to apply voltage to each pixel (column 6, lines 55-61); and control means controlling said driving means to supply the initial voltage to said pixels to set all pixels to the P state (column 10, lines 11-20), subsequently supplying sufficient voltage to selected pixels to switch said pixels to the FC state to provide the desired pattern (column 11, lines 1-9) and maintaining said display for a period of time for viewing of the display (column 8, lines 1-10).

As to claim 15, a bistable cholesteric liquid crystal display as claimed in claim 6 wherein the liquid crystal display is driven only on receipt of a signal by the control means (column 6, lines 7-10).

5. Claims 7-11 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Patent # 5,933,203 ("Wu et al.") 5,748,277 in view of ("Huang et al.").

Wu et al. discloses a bistable cholesteric liquid crystal display (column 1, lines 21-27) claimed in claim 6 wherein a matrix of overlapping electrodes with the pixels of the display being defined by overlapping regions of said matrix of electrodes.

As to claim 8, a bistable cholesteric liquid crystal display as claimed in claim 7 wherein said matrix of overlapping electrodes (column 7, lines 41-49) comprises a first set of electrodes and a second set of electrodes (column 10, lines 47-59) with the pixels defined by the overlapping regions between said first and second sets of electrodes (column 10, lines 47-59)

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and wherein the reset voltage from the driving means to said electrodes to drive all said pixels to the P state (column 10, lines 11-20).

As to claim 9, a bistable cholesteric liquid crystal display as claimed in claim 8 wherein the voltage supplied to the pixels for the display (column 10, lines 39-42) comprises providing an address voltage to one set of electrodes and a data voltage to the remaining set of electrodes (column 11, lines 11-15) such that selected pixels receive a cumulative total of said voltages and non-selected pixels receive a data voltage of opposite sign to provide a lower total voltage to non-selected pixels (column 11, lines 1-9).

As to claim 10, a bistable cholesteric liquid crystal display as claimed in claim 9 said address pulse voltage is approximately 24 ± 3 V (Fig. 9) is where the voltage is approximately 24V.

As to claim 11, bistable cholesteric liquid crystal display as claimed in claim 9 wherein said data pulse voltage is approximately 6 ± 2 V (Fig.6) is where the voltage is approximately 5V.

As to claim 16, a bistable cholesteric liquid crystal display (column 1, lines 21-27) as claimed in claim 6 wherein said display is incorporated in a pager or a cellular telephone.

Accordingly Wu et al. teaches all the claimed limitations as recites in claims 7-11 and 16 with the exception of providing a matrix of overlapping electrodes and viewing document incorporated a pager or a cellular phone.

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However, Huang et al. discloses the said display includes a matrix of overlapping electrodes with the pixels of the display being defined by the overlapping regions of said matrix of electrodes (Fig 2B) (column 7, lines 41-49) and a context of document viewing wherein said display is incorporated in a pager or cellular telephone (column 6, lines 33-41).

It would have been obvious to utilize the electrodes of Huang et al. to drive the LCD of Wu et al. because this would provide control of the image data in an orderly manner.

6. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over patent # 5,933,203 ("Wu et al.") in view of Patent # 5,570,216 ("Lu et al.").

Wu et al. discloses a bistable cholesteric liquid crystal display (column 1, lines 21-27) as claimed in claim 6 wherein said electrodes comprise transparent conductive film. Accordingly Wu et al. teaches all the claimed limitations as recites in claim 12 with the exception of said electrodes comprise transparent conductive film.

However, Lu et al. discloses a substrate wherein said electrodes comprise transparent conductive film (column 3, lines 9-16).

It would have been obvious to utilize the transparent electrodes taught by Lu et al. for the LCD taught by Wu et al. because this would allow the display to be used as a projector for projecting or transmitting light though the display panel.

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Patent # 5,933,203 ("Wu et al.") in view of patent # 5,748,277 ("Huang et al.") in view of Patent # 5,570,216 ("Lu et al.").

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Wu et al. discloses a bistable cholesteric liquid crystal display (column 1, lines 21-27) as claimed in claim 11 wherein said transparent conductive film comprises indium tin oxide. Wu et al. teaches all the claimed limitations as recites in claim 13 with the exception of providing said transparent conductive film comprises indium tin oxide.

However, Lu et al. discloses a thin layer wherein said transparent conductive film comprises indium tin oxide (column 3, lines 9-16).

It would have been obvious to utilize the transparent electrodes taught by Lu et al. in the combined device of Wu et al. and Huang et al. because this would allow light incident to pass though electrodes layer for better projection.

8. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over patent # 5,933,203 ("Wu et al.") in view of Patent # 5,889,566 ("Wu et al.").

Wu et al. discloses a bistable cholesteric liquid crystal display (column 1, lines 21-27) as claimed in claim 6 wherein said liquid crystal cell has a gap of 4 to 20 microns. Accordingly Wu (203) teaches all the claimed limitations in claim 14 with the exception of providing the cell gap of 4 microns.

However, Wu et al. (566) discloses the said liquid crystal cell has a gap (column 10, line 58)

It would have been obvious to utilize the cell gap disclosed by Wu et al. (566) in the cholesteric liquid crystal display taught by Wu et al. (203) because this would allow the display to have a better resolution.

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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jean Lesperance whose telephone number is (703) 308-6414. The examiner can normally be reached on from Monday to Friday between 8:00AM and 4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Jherpe, can be reached on (703) 305-4709. The fax phone number for the organization where this application or proceeding is assigned is (703) 308-6606.

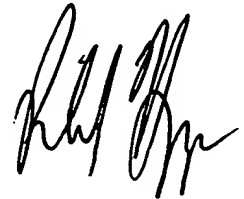
Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-3900.

Jean Lesperance



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Date 10-29-99



RICHARD A. HJERPE
SUPERVISORY PATENT EXAMINER
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